

Remarks

Applicant respectfully requests reconsideration of the application.

Information Disclosure Statement

In the Action, the Examiner has noted that he has considered the supplemental IDS filed in June 2006. However, Applicant previously noted that the Information Disclosure Statement filed April 25, 2002, appears in the USPTO file as shown in the PAIR system, yet there is no indication that it has been considered. Applicant's respectfully request the Examiner to consider the IDS submitted on April 25, 2002.

Section 101 Rejections

Claims 1-20 are rejected as being directed to non-statutory subject matter. Claims 1-6 and 10-16 are method claims. These claims are statutory process claims because they are limited to a practical application within the technological arts. In particular, claims 1-6 recite methods for modifying a media signal so that it is authenticated by detecting alteration. Media signal processing to prepare a media signal for authentication is a practical application. These claims are patentable subject matter for at least the same reasons as claim 10 of the cited Chang patent. Claims 10-16 recite a practical application, namely, authenticating a media signal.

Media signals comprise audio, images or video which represents physical activity outside of a computer. Thus, manipulation of such data representing physical activity is yet another basis for finding that these method claims constitute statutory processes.

Claims 7 and 17 are computer readable medium claims recited in the commonly accepted Bearegard format.

Claims 18-20 are conventional apparatus claims, reciting a statutory product with parts, such as a "detector" and "analyzer."

Claim 8 is also a statutory product claim. It recites a detector. As amended, it also recites a processor and memory.

Claim 9, in addition to reciting the detector elements of claim 8, includes a "means plus function" element, namely, a means for computing the relationship. Therefore, it is also a statutory product claim.

Section 112 Rejections

Claims 8-9 and 17 are rejected under 35 U.S.C. Section 112, second paragraph, as being unclear as to whether they are directed to an apparatus or method. As noted above, claims 8-9 recited a detector, and therefore, these claims are directed to an apparatus. As amended, claim 8 includes additional apparatus elements, and now, is even more clearly an apparatus claim. The media signal processed by the detector is defined in part according to a method to produce it. But this does not change the fact that claims 8 and 9 are apparatus claims.

Claims 17 recites an apparatus, namely, a computer readable medium. It employs the familiar Beauregard format for claiming computer implemented methods stored on computer readable media.

Prior Art Rejections

Claims 1-2, 4-5, and 7-9 and 14 are rejected under 35 U.S.C. Section 102(e) as being anticipated U.S. Patent No. 6,532,541 to Chang et al. (“Chang”).

Chang recites a system for authenticating a digital image. This system first computes a robust digital signature for an original image and stores this signature. This signature is referred to as “robust” because it is derived from “invariant” features of the original image. Specifically, these invariant features are derived from differences between DCT coefficients of non-overlapping 8 by 8 pixel blocks in the original image.

To authenticate an image, the system extracts the same set of invariant features from a suspect image and compares them with the invariant features in the pre-stored digital signature for the original image.

In contrast to the method of claim 1, Chang does not adjust a relationship between selected frequency coefficients to a reference value as claimed. Chang teaches a fundamentally different approach in which relationships between coefficients in different blocks are used to derive a signature, and this deriving of the signature is performed without adjusting the image. The Examiner may have interpreted Chang’s approach of varying the threshold k used to compute the signature as adjusting the relationship between coefficients as claimed. However, while Chang’s method of computing the

signature of the image may vary the threshold used to compute the signature, it does not adjust the coefficients of the image. Instead, it only varies the parameters used to compute the signature. Chang stores the signature as a representation of the relationship between coefficients in the original image. Then, if this relationship is changed in the image, the comparison of a new signature computed from the new image with the signature of the image may reveal that the image has changed.

The claimed approach, in contrast, adjusts the relationship between selected coefficients in the media signal. This approach does not require that a unique signature be stored separately for each image to be authenticated.

Dependent claims 2, 4-5 are patentable over Chang for the same reasons as claim 1.

In addition, Chang does not teach “the relationship comprises a ratio between a selected coefficient and one or more neighboring coefficients” as set forth in claim 4. Chang’s signature is computed based on differences between coefficients in different, non-overlapping 8 by 8 blocks.

Claims 7-9 are patentable over Chang for similar reasons as claim 1. Each of these claims either recites adjusting a relationship (e.g., claim 7), or the relative magnitude being adjusted to a reference value (e.g., claims 8-9).

Claims 10-11 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang.

Regarding claims 10-11, Chang does not teach or suggest: evaluating signal peaks in which at least some of the peaks are set such that the relative magnitudes of the peak at a selected location satisfies a predetermined relationship with magnitude at one or more other frequency locations. As noted above, Chang merely computes the relationship between coefficients and stores it as a signature but does not set the relative magnitudes between coefficients (much less peaks) in the image.

Chang clearly does not teach use of one or more peaks to re-orient the media signal as recited in claim 11.

Claims 14 and 17 are patentable over Chang for at least the reasons provided for claim 10.

Claims 15-16 are rejected over Chang in combination with Official Notice. However, as noted, Chang lacks elements of claim 10, regardless of whether one of skill in the art could extend Chang's teachings to audio and/or video.

Chang does not teach or suggest all of the elements of claim 18. Chang does not teach a detector for correlating a calibration signal, where the calibration signal includes a set of peaks. Moreover, Chang does not teach "at least some of the peaks being set such that such that the relative magnitudes of the peak at a selected location satisfies a predetermined relationship with magnitude at one or more other frequency locations" as recited in claim 18 in combination with other elements. As noted, Chang computes a signature based on differences between DCT coefficients of different blocks, but does not set the relative magnitude of peaks as claimed. Further, Chang does not teach the claimed analyzer. Chang's authentication method compares a new signature of an image being authenticated with a signature of the original image without altering the image, and specifically, without setting peaks in the media signal as claimed.

Regarding claim 19, Chang does not teach or suggest the use of peaks for both correlating with a calibration signal for orientation and detecting a change in a relative magnitude for authentication. This approach enables a single set of peak modifications to be made for the dual purpose of making the watermark decoder robust to changes in orientation and to enable authentication.

Claims 6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fridrich, Jiri, "Combining Low Frequency and Spread Spectrum Watermarking" ("Fridrich1), or alternatively Fridrich, Jiri, "Image Watermarking for Tamper Detection" (Fridrich 2").

As noted above, Chang lacks elements of base independent claims 1 and 10. In addition Fridrich 1 and 2 also lack elements of these claims. The requisite motivation to combine Chang, which is a signature method with no alteration to an image, with Fridrich's watermarking methods has not been established.

Claim 3 and 20 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Chang and U.S. Patent No. 6,625,295 to Wolfgang et al. ("Wolfgang").

The combined teachings of the cited art fail to teach all of the elements of claim 3. None of these references teaches “the alteration to be detected is scanning, printing or photocopying.” Chang lacks elements of the base independent claims 1 and Wolfgang refers to a form of authentication in which a suspect image is examined to determine whether a suspect image is derived from a watermarked original. This is not teaching an alteration to be detected is scanning printing or photocopying because this method will identify both an original and a copy of a watermarked document as being derived from the original without being able to detect whether it has been scanned, printed or photocopied.

Since the cited art fails to teach all of the elements of the claims, the claims should be in condition for allowance.

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